M-5001-24

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MICROFLIT -- A BRIEF UTILITY PROGRAM FOR TX-0

MICROFLIT is a general utility program for use in debugging long programs. It features the most useful parts of FLIT, but, since brevity is a prime object, it operates in octal numbers only. The program will break, proceed, word or address search, and of course examine and change registers. It is available in two versions:

MICROFLIT uses a standard input routine and occupies registers 13777 to 14537 octal with entry at 14000.

Microflit Autoloader occupies 540 registers and may be placed anywhere in storage. It uses a relocating input routine which occupies registers 17660-17777. The entry point of the program will be at the address specified by the TBR. Hence, a transfer instruction to such address will bring control to Microflit when TEST is depressed. Any address from 1 to 17120 may be specified. The loader portion of storage is available for use after Microflit Autoloader is loaded.

Use of the program: Microflit will accept as numerical input any combination of octal numbers separated by plus, minus, or space, and also the following special characters:

a: Refers to accumulator storage. A begin or proceed instruction will load the accumulator from this register, and the contents of the accumulator will be stored there when the program traps a break instruction. Its value is zero when the program is read in. a/ examines this register.

l: Refers to the live register, which is treated in the same way as the accumulator.

m: Refers to the mask which is used in examining registers during a word search. Mask ones specify bits to be examined. It is initially 777777 such that the entire word will be examined. For an address search, m should be 17777. It is not recommended that a search be undertaken when m is +0, unless it is desired to print the contents of every register in the computer. Any other number may be used as a mask, if desired.

.: Is the address of the last register typed. Example: If 1733 was the last register examined, .-3/ will examine 1730, .-3g transfers to 1730.

The program uses the following control characters:

↑: Register examination character. It is used in the same way as in Flit and UT-3.

If it is desired to examine the register addressed, type↑ again. This process may be continued indefinitely. The value of a will, however, be the address of the first register in the chain, and $a+1$ will be examined by backspace.

Carriage return: If a register is examined, carriage return stores the word typed in the register. If nothing has been typed, no change is made.

Back space: Same as carriage return, and examine the next register.

w: Initiates a word search for the word preceding the character w. Typing a w preceded by nothing but a carriage return is an error. Microflit will print out all occurrences of the specified bits, including three or four in itself.

b: Inserts a break point at the indicated register. The contents of the AC and LR are printed out when control reaches this point, and Microflit assumes control. b preceded by nothing resets the break point. One break point may be used.

p: Proceed after break. Proceeding before a break trap has occurred is an error. Characters preceding p are ignored. If a break trap occurs, the instruction in the register which was broken will be executed upon receipt of p.

g: Goto the indicated register. The contents of a and l will be in the accumulator and live register. Failure to specify an address before giving g is an error.

Any other character: Error. An x will be printed in red. Preceding typing is deleted. Thus, any such character may be used to erase mistakes.

Adventurous souls may wish to experiment with the upper and lower limits of word search. The lower limit is in $m + 1$ as an add instruction, which is initially add 0. The upper limit is in $m + 2$, as -add-(upper limit)+1, and is initially 560001, corresponding to an upper limit of 17777. Microflit is a very unsophisticated program, and will cheerfully clobber itself if you ask it to.

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